

PERCEPTIONS OF SELF-EFFICACY, STRESS, AND THE CONDITIONS OF DEVELOPMENT OF NURSING STUDENT COMPETENCIES DURING THEIR FIRST PRACTICAL CLASSES

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ABSTRACT

Introduction: The character and quality of students' clinical experience, in addition to knowledge, play an important role in the process of competence development. Nursing students' first experiences is of utmost importance.

Aim of the study: The aim was to assess the relationship between selected individual variables and the nursing students' perceptions of the quality of their clinical placement experience.

Material and methods: The research tools included: an original questionnaire, Ascent to Nursing Competence Scale, Generalized Self Efficacy Scale and Perceived Stress Scale. The subjects were 322 undergraduate nursing students.

Results: Younger students, those with a high sense of self efficacy and those who experienced low levels of stress achieved higher scores in all subscales of the ACS scale.

Conclusions: Supportive learning environment facilitates the development of competence of nursing students. The sense of self-efficacy and the sense of belonging to an interdisciplinary team of learners play a crucial role in this process.

Key words: clinical placement, competence, self-efficacy, stress, student, nursing.

INTRODUCTION

Development in Nursing creates a need to test oneself in new environments and meet new requirements but also provides many opportunities for nurses. Nursing competence is an important factor in ensuring quality, safety, and profitability of health care [1-4]. The most important competencies include critical thinking and problem-solving skills which allow the nurse to apply theoretical knowledge in practice in a diverse, multi-disciplinary, and multi-cultural environment.

Theoretical framework

Competence is understood as a combination of technical knowledge, cognitive and social skills, motives, attitudes, and needs, all manifested in visible

and underlying behaviours, personality traits, and the disposition to behave in an appropriate manner including a sense of self-efficacy and individual values and attitudes [5, 6]. Developing professional competence is a continuous process in both the theoretical and practical aspects, changing with growing professional and personal experience. Development of professional identity is essential during the transition from student to professional [7].

Self-efficacy beliefs produce their effects through four major processes that usually operate in concert, regulating human functioning: cognitive, motivational, affective and decisional processes. People's beliefs in their efficacy to manage their own functioning and to exercise some measure of control over stressful events that affect their lives promote resilience to them [8, 9]. High levels of motivation are also associated with success and wellbeing. Competence is the

ability to demonstrate mastery in particular area, relatedness refers to the need to have connections with and to care for others and autonomy refers to the propensity of an individual to self-organize experiences and actions [10].

Great attention is, therefore, given in nursing education to the development of competencies, including not only nursing knowledge and skills, but also social competencies [11, 12]. In addition to knowledge, the character and quality of the clinical experience of the student play an important role in the development of professional competencies. The first experience gained during practical training on the ward after completing nursing lab classes is of critical importance. The practical training in a clinical ward under the supervision of an academic teacher is the first time in clinical placement for the students and the main objective of this clinical education is to acquire nursing, professional, and social skills [14-16]. The level of student satisfaction with clinical training increases their capabilities and their desire to develop knowledge and to achieve competence [17-19]. Clinical education gives students the opportunity to combine theory with practice and is a source of experience that makes it easier to achieve competence. Often, the educational process is a stressful experience and so, to fully benefit from this experience and develop a positive professional identity, it is imperative that nursing students successfully cope with education-related stress. In addition to the teacher, it is the nursing team that not only shapes the experience of students but are also a major supporting force on a clinical ward [20]. For students, it is extremely important to be accepted by the interdisciplinary team which then translates into a sense of belonging to a team. To feel a sense of belonging is to feel accepted by others, respected, like one "fits in" [21, 22]. Levett-Jones *et al.* [14], confirmed that a sense of belonging is conducive to the development of students' self-confidence in their professional activities. Other autor [7] emphasize that students need the opportunity to "think, act and feel" like a professional during their studies. This sense of belongingness and how it relates to nursing student experiences as they learn to become nurses in their clinical placements is of great importance [22, 23]. The sense of belonging, the support received from teachers and co-workers on the ward, helps to create good conditions for the development of knowledge and professional competence. It has been determined that the attitudes and behaviour of nurses towards the students directly affected their learning and socialization [15, 24, 25], achieved competencies and confidence [26].

Competencies are characteristic of real qualifications and determine the factors associated with the formation of professional competence, facilitating

the process of their formation. Therefore, knowing the factors that determine the process of developing nursing competencies will contribute to improving the education of nursing students and the greater professionalisation of nursing care.

MATERIAL AND METHODS

The aim of this study was to assess the relationship between selected individual, socio-demographic, educational variables and the nursing students opinions about conditions and attributes for the development of professional competencies during their first practical classes. The study was carried out using a diagnostic survey questionnaire and rating scales. The research tools included: an original questionnaire, ACS – Ascent to Nursing Competence Scale, Generalised Self-Efficacy Scale, and Perceived Stress Scale.

The original questionnaire covered socio-demographic variables (age, gender, place of residence).

The ACS – Ascent to Nursing Competence Scale assessed the conditions and attributes for the development of professional competencies in nursing students. It consisted of closed questions with responses based on a 5-point Likert scale, thematically divided into three subscales. The first subscale – Support (ACS W) allowed for determining the relationship of the students with their tutor/teacher and learning support for students at the beginning of their practical training on the ward. The second subscale – Need to belong to a group (ACS B) assessed the students' need to be included in the work of the group. It indicated the necessary role of tutors/teachers to enable students to gain a sense of acceptance by the medical team. The third subscale – Knowledge and Skills (ACS LW) allowed for the assessment of the students' knowledge and professional skills. The scale consisted of 36 statements that a respondent evaluated from 0 to 4 points. Score 0 – I definitely do not agree to 4 – I definitely agree. All subscales of the ACS are characterised by moderately high criterion validity and reliability. The original version of the scale [27] was subjected to a multi-stage process of adaptation to Polish conditions by Brodowicz and Zarzycka [28].

Generalised Self-Efficacy Scale (GSES) measured the strength of the individual's overall belief in their effectiveness in coping with difficult situations and obstacles. It consisted of 10 statements relating to different personal characteristics which the respondent marked as true or false in their particular case. Score 1 – no, 2 – not really, 3 – rather yes, 4 – yes. The theoretical range of the scale was 0 to 40 points. Higher scores corresponded to a higher sense of self-efficacy. The maximum number of points it was possible to obtain was within a numerical range 30-40 pts. which indicated a high sense of self-efficacy, between 25-29 meant an average level, and between 10-24 points,

a low level. The Polish version was developed by Schwarzer, Jerusalem and Juczyński [29].

Perceived Stress Scale (PSS-10) by Cohen, Kamrack, Mermelstein, as adapted by Juczyński and Ogińska-Bulik, was used to assess the severity of the stress related to respondents' own life situation during the last month. It contained 10 questions about subjective feelings associated with personal issues and events. For each question, the respondent answered using a 5-point scale from "never" – 0, to "very often" – 4. The overall score of the scale, being the sum of points, had a theoretical distribution ranging from 0 to 40. After converting into standardised units, the results within 1-4 sten scores were treated as low, 5-6 as average, and 7-10 as high [30].

The study involved 322 subjects who were first-year undergraduate nursing students at university and high vocational school in south of Poland. The fieldwork was carried out in 2016 after the students had completed the first block of practical training classes. The students were enrolled in the study if they: 1) were studying for an undergraduate degree in nursing, 2) were in the first year of studies, 3) had completed the general medicine module (including anatomy and physiology), the general nursing module (including the fundamentals of nursing), and parts of the humanities module (including psychology, philosophy, and ethics), 4) had given informed consent to participate in the study. The students were informed about both the confidentiality and anonymity of the research and that participation was voluntary and they could refuse/withdraw from the study at any time during the study. The study was approved by the Bioethics Committee (approval no. 122.6120.193.2015). 372 questionnaires were distributed, 326 returned, and 4 rejected due to numerous shortcomings in responses. Therefore, 322 questionnaires were left for analysis and statistical work. Paper questionnaires were prepared for all first year undergraduate nursing students who completed practical training in the clinical ward. Questionnaires received from respondents were evaluated individually and checked for completeness, data was then coded, entered into the database and processed using IBM SPSS Statistics 20 for Windows. Differences between variables were tested using chi-square independence test, Kruskal-Wallis test, Spearman rank correlation and logistic regression. The adopted level of significance was $\alpha = 0.05$.

RESULTS

The majority of the subjects were women ($n = 300$, i.e. 93.2% of the sample). Men formed 6.8% of the subjects ($n = 22$). The mean age of respondents was 20.89 years ($SD = 2.47$) with student age ranging from 19 to 35 years old. Most often ($n = 146$, i.e. 45.3%), the subjects were 20 years old.

Analysis of the results of Ascent to Nursing Competence Scales demonstrated that most students assessed their Knowledge and Skills ($M = 2.75$, $SD = 0.73$) as the highest. Support was assessed at almost the same level ($M = 2.74$, $SD = 0.82$). Need to belong to a group was evaluated as slightly lower ($M = 2.61$, $SD = 0.71$). The average score on the Ascent to Nursing Competence Scale was 2.68 (ranging from 2.09 to 3.39). Higher average scores were obtained in the subscale of Knowledge and Skills – 2.75, then the Support subscale – 2.74, and the lowest scores in the subscale of Belonging to the group – 2.61. The standard deviations ranged from 0.71 to 0.82, which indicated a moderate diversity of results.

Analysis of the data allowed for a detailed examination regarding received support and cooperation of the student with the teacher/nurse. Students most frequently pointed out that the teacher made them familiar with the operation of the ward at the beginning of practical classes ($M = 3.39$), helped them adjust to the environment ($M = 2.79$), and made them feel welcome in the ward ($M = 2.75$). In contrast, however, they were not introduced to all the ward staff ($M = 2.15$) and did not feel welcomed (by the staff) of the clinical ward ($M = 2.56$). Moreover, the students stated that they had felt ignored by the medical staff when they started their practical training ($M = 2.82$). They agreed that the teacher was happy to devote time to them ($M = 3.04$) but also often felt like "the odd ones out" in the ward ($M = 2.97$). They established a good relationship with their teacher ($M = 2.80$), who showed confidence in the students in relation to patient care duties ($M = 2.97$). The subjects noted that they were not supported in developing skills ($M = 2.77$) but also frequently pointed out that the teacher encouraged them to do so ($M = 2.73$). The staff did not support them enough in improving their skills ($M = 2.60$) and, during the practical training, they did not feel like part of the team ($M = 2.54$). They also stated that the teacher didn't always thank them for their help at the end of the shift ($M = 2.47$). Medical personnel were reluctant to devote time to them ($M = 2.34$) and they felt that they did not recognise the students' contribution to the work of the team ($M = 2.29$). Moreover, they did not feel as if they were important members of the team ($M = 2.25$) and didn't experience a connection with the staff during practical training ($M = 2.09$). The results of this subscale indicate a weak sense of belonging to a group – the interdisciplinary team. The respondents also recognised that, during the practical training, they were better able to combine theory with practice ($M = 2.91$) and that duties were assigned to them in an appropriate manner, according to their knowledge and skills ($M = 2.84$). They further stated that they felt they made an important contribution to patient care ($M = 2.82$). They concluded that they were

afforded an opportunity to gradually become independent at work ($M = 2.71$) and encouraged to acquire new skills ($M = 2.80$). They gained the conviction that thanks to completing their practical training, they had the makings of a competent nurse ($M = 2.80$). They also felt more professionally talented after completing the classes ($M = 2.78$), however, they harboured a slightly weaker belief that they possessed good time-management skills ($M = 2.75$) but felt confi-

dent enough to become gradually more independent ($M = 2.71$). The respondents did not fully agree with the statement that they had achieved their practical training goals ($M = 2.62$). They concluded that, overall, they had not had many opportunities to practice clinical skills ($M = 2.51$).

It should be emphasised that students greatly appreciated the commitment and thoughtfulness of the teacher. They found the teacher's support to be extremely important in adapting to the new environment. The teacher created a sense of security and acceptance and encouraged the development of skills. The students were convinced that thanks to the completion of the practical training and gradually becoming more independent, they were better able to combine theory with practice. They further stated that they felt they had made an important contribution to patient care.

Data analysis demonstrated that the age of the respondents significantly differentiated the ACS scores. Older students obtained lower scores in the individual ACS subscales than their younger peers. They also felt less support from the teacher and staff. Their need to belong was met to a significantly lower degree than in the case of the younger students. In terms of knowledge and skills, the older students demonstrated lower achievements than the younger students. No significant gender differences were observed on any of the ACS subscales (ACS W $p = 0.95$, $Z = -0.64$; ACS B $p = 0.54$, $Z = -0.66$; ACS LW $p = 0.35$, $Z = -0.94$).

Based on the Generalised Self-Efficacy Scale, it was found that 7.1% of students ($n = 23$) experienced low levels of self-efficacy, 37.0% of students ($n = 119$) achieved average scores on this scale while more than half of the students ($n = 180$, i.e. 55.9%) demonstrated high levels of self-efficacy. The study has shown that students with higher self-efficacy obtain higher scores on subscales related to the development of competence. With the increase in the sense of self-efficacy, the level of competence in each area of the ACS also significantly increased (Table 1).

Based on the analysis of the PSS 10 scores, it was found that the average level of perceived stress among the students (0-40 potential range) stood at 19.07 points ($SD = 6.26$) and ranged from 5 points to 35 points. Half of the respondents had scores below 19 points. 22.7% of students ($n = 73$) experienced low levels of stress. Slightly more ($n = 89$, i.e. 27.6%) felt average levels of stress and half of the participating students ($n = 160$, i.e. 49.7%) experienced high levels of stress. Students with low stress scored higher on the subscales of Support, Need to belong, and Knowledge and Skills than the students who felt greater intensity of stress. It was found that competence decreased with increasing stress levels (Table 2).

Table 1. Ascent to Competence Scale (ACS) and the sense of self-efficacy of the subjects (GSES)

GSES results		ACS W	ACS B	ACS LC
Low	M	2.26	2.09	2.12
	SD	0.85	0.73	0.80
Average	M	2.72	2.53	2.60
	SD	0.75	0.61	0.65
High	M	2.82	2.74	2.92
	SD	0.85	0.74	0.70
Total	M	2.74	2.61	2.75
	SD	0.82	0.71	0.73
p		0.0063	0.0001	< 0.0001
χ^2		10.13	19.70	35.78
ACS		ACS W	ACS B	ACS LC
GSES	rho	0.173	0.256	0.380
	p	0.0018	0.0000	0.0000
	n	322	322	322

M – average; *SD* – standard deviation; χ^2 – independence test; Spearman's rho correlation coefficient; p – level of statistical significance $p = 0.05$; n – number of subjects (322)

Table 2. Ascent to Competence Scale and the level of stress experienced by respondents ($n = 322$)

Perceived Stress Scale PSS 10		ACS W	ACS B	ACS LC
Low results	M	3.10	2.96	2.99
	SD	0.71	0.64	0.70
Average results	M	2.69	2.64	2.80
	SD	0.82	0.70	0.73
High results	M	2.61	2.44	2.60
	SD	0.82	0.70	0.71
Total	M	2.74	2.61	2.75
	SD	0.82	0.71	0.73
p		0.0001	< 0.0001	0.0001
χ^2		19.32	30.11	19.01
ACS		ACS W	ACS B	ACS LC
GSES	rho	-0.226	-0.323	-0.282
	p	0.0000	0.0000	0.0000
	n	322	322	322

M – average; *SD* – standard deviation; χ^2 – independence test; Spearman's rho correlation coefficient; p – level of statistical significance $p = 0.05$; n – number of subjects

The study showed that the level of support was heavily dependent on the level of stress. Higher scores on the scale of Support were obtained by students with lower stress levels (OR = 0.89, 0.82-0.96). The results also indicated that age influenced the results of the Support scale to some extent. Also, older students received lower scores on the Support scale than younger students (OR = 0.82, 0.67-1.01). Results of the Need to belong scale were significantly dependent on the level of stress experienced (PSS 10) as well as self-efficacy (GSES). It was found that those who experienced higher levels of stress had lower scores on the scale of Need to belong (OR = 0.88, 0.81-0.96). Students who achieved higher scores on the Self-Efficacy Scale (GSES) had higher scores on the Need of Belonging to the group (OR = 1.17; 1.02-1.33). The results of the Knowledge and Skills scale depended on self-efficacy (GSES). Students who had higher self-efficacy also had higher scores on the Knowledge and Skills scale (OR = 1.42, 1.17-1.72; Table 3).

DISCUSSION

Clinical experience gained through the application of theoretical knowledge in practice is the basis of nursing as a profession [31, 32]. The quality of clinical experience and knowledge affects the level of competence of future nurses [33]. The improvement in nursing competencies is a gradual and continuous process, requiring constant development [34]. That positive interpersonal relationships constituted one of the major factors affecting the clinical experience of students [32]. Results of the other study confirmed that students value positive relationships with teachers and nursing teams as supporting the learning environment [34-36].

The current study has demonstrated that nursing students obtained high averages in all subscales of the Ascent to Nursing Competence Scale. It should be noted, however, that in assessing the need to belong to a group – the interdisciplinary team – there were several items that indicated a poor sense of belonging to that group among the subjects. Lack of positive relationship with the medical staff emerged as one of the obstacles to effective learning [22, 31, 37, 38]. The experience gained during the course of clinical training significantly affect the formation of a sense of belonging to a group and this, in turn, contribute to students' greater satisfaction with learning [39].

Development of professional competence is influenced by many factors, internal and external. Our study revealed that the development of nursing competencies was determined by such variables as age, self-efficacy, and the severity of stress respondents experienced during the course of training on the clinical ward. It was established that the level of competence in each of the studied areas decreased with age.

Table 3. Logistic regression for variables ACS scores for sex, age, severity of stress, self-efficacy

ACS	determinants	p	OR
Being welcomed	Gender_OK_1M	0.4736	0.54
	Age	0.0737	0.83
	PSS10_average score	0.2351	0.47
	PSS10_high score	0.0021	0.15
	GSES_average score	0.0907	7.28
	GSES_high score	0.1063	6.19
	Constant	0.1506	46.99
Belongingness	Gender_OK_1M	0.6575	1.79
	Age	0.0540	0.82
	PSS10_average score	0.2759	0.40
	PSS10_high score	0.0066	0.12
	GSES_average score	0.3796	3.03
	GSES_high score	0.0508	9.49
	Constant	0.2598	27.45
Learning and competence	Gender_OK_1M	0.2591	0.33
	Age	0.0457	0.81
	PSS10_average score	0.4967	0.63
	PSS10_high score	0.0314	0.25
	GSES_average score	0.2110	6.66
	GSES_high score	0.0161	34.67
	Constant	0.9991	0.00

Students with higher self-efficacy scores achieved higher scores in all areas of the competence scale. Self-efficacy of nursing students while taking practical measures [40] is essential for nursing education and professional nursing practice. The sense of self-efficacy is important in the process of striving to achieve goals [9]. Other author agrees that strong sense of self-efficacy influences a student's ability to take on more challenging tasks, self-regulate better in the learning process, and apply more cognitive strategies to their learning [41]. A sense of self-efficacy has a significant impact on the level of stress in nursing students [42].

Certainly, the sense of self-efficacy in itself is not enough without appropriate skills and abilities. Faith in one's abilities, however, facilitates achieving success and releases extra energy. Half of the nursing students felt stress of a high intensity during their practical classes. Similar results were obtained by other authors [42, 43]. Our results also showed that the students who experienced low and average stress felt a greater sense of belonging to the group. In turn, the results of research conducted by Grobceker [44] have confirmed a statistically significant correlation between the sense of belonging and stress perceived by students. Nursing students in our study who perceived stress of high intensity scored significantly lower on the Ascent to Competence Scale than the

students who suffered low intensity stress. Chan *et al.* [16] and Yildirim *et al.* [43] emphasise the legitimacy of effective interventions to counter educational stress, which would not only favour the development of skills but also reduce its health effects. Fornès-Vives *et al.* [45] showed that coping and personality changes experienced by nursing students throughout their degree program seem to mirror the professional competencies needed by future licensed nurses.

In light of the current study, it seems reasonable to say that attention to the development of a strong sense of self-efficacy, reducing the number of stressors during practical classes, and building a sense of belonging to the interdisciplinary team all play a key role in shaping the competence of nursing students.

CONCLUSIONS

The focus of nursing education should be on making students achieve high levels of competence. It is recognised that students' adaptation to clinical practice can be influenced not only by the organisation but also by their personal attributes and disposition. The factors which determined development of the competencies of nursing students were: age of the subjects, their sense of self-efficacy, and the level of perceived stress during practical classes. Understanding the impact of a sense of self-efficacy, perceived stress, and sense of belonging on students' competencies is invaluable for nurse educators, school administrators, and hospital managers. Clinical placements are very stressful environments which can be overwhelming and easily undermine students' learning and confidence. It seems, therefore, to be very important to create a positive working environment for students and to use their stress as a source of mobilisation. An increase of sense of self-efficacy can promote better performance in learning and greater satisfaction with the profession.

Results suggest providing individual interventions for those students who need support in dealing with the challenges of the nursing curriculum. Creating the optimal clinical learning environment for identity development is central to facilitating students' learning in practice. Educators should consider systematic strategies, adapted from organisational socialisation, to facilitate the creation of the optimal clinical learning environment. Nursing programs should develop a combination of teaching methods and learning strategies for improvement in the areas of clinical competencies, critical thinking, and evaluation.

LIMITATIONS OF THE STUDY

The main limitation of this study is that data collection only occurred at one point in time, rather than

longitudinally. Also, participants in the study were mainly young women which could potentially cause bias. Further research which includes preceptors, staff nurses, and instructors is suggested in order to reveal the true image of the students' level of competencies and could also be undertaken at multiple universities.

Disclosure

The authors declare no conflict of interest.

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